

REMARKS

Reconsideration of the outstanding Office Action is respectfully solicited.

The Claims are directed to pipes and pipe couplings. In order to reduce the issues on appeal, Claims 33 and 39 have been amended to delete the word "composition". By way of explanation, Applicants advise that creep resistance is a measurement of hydrostatic pressure which applies against the inside surface of an article, *e.g.*, a pipe. Accordingly, in Applicants' view, the rejection under 35 U.S.C. § 112 is now moot. The amendment to Claims 36 and 40 is to change "measure" to measure.

Applicants note with appreciation the Examiner's indication of allowable subject matter.

Applicants believe that they are further entitled to Claims the breadth of Claim 26 and Claims 38:

26. An article of manufacture selected from the group consisting of a pipe and a pipe coupling comprising a polyethylene-based composition wherein the polyethylene exhibits a standard density, measured at 23°C according to ASTM Standard D 972, of greater than 940 kg/m³ and wherein the polyethylene-based composition comprises talc in an amount of **less than 1 part per 100 parts by weight of polyethylene**.

38. An article of manufacture selected from the group consisting of pipe and pipe coupling, which comprises polyethylene wherein the polyethylene exhibits a standard density, measured at 23°C according to ASTM Standard D 972, of greater than 940 kg.m³ and talc in an amount which **does not exceed 0.5 part per 100 parts by weight of polyethylene**.

No individual prior art reference describes or suggests the underscored recitations in Claims 26 or 38. Accordingly, the combination of the description of the references does not result in Applicants' claimed subject matter. Legally, the failing of the 'combination' establishes,

in Applicants' view, that no *prima facie* case of obviousness is established by the Patent and Trademark Office [cf. In re Vaeck]:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. **Finally, the prior art reference (or references when combined) must teach or suggest all the Claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

While the prior art does not describe pipes or creep resistance, it further fails to suggest the polyethylene composition containing less than 1 part per 100 parts by weight of polyethylene of rejected Claim 26, and fails to suggest a polyethylene composition containing talc in an amount which does not exceed 0.5, as in Claim 36. If the prior art describes a range of 1-30 weight percent filler, that lower end point, the number 1, involves using 100% more talc than that number recited in the range of Claim 36. In summary, (a) there is no teaching, and the Examiner has presented no rationale to combine the references to arrive at the present invention, and (b) there is no teaching in the references that would lead one to expect the superior properties demonstrated by the invention.

SUBJECT MATTER OF THE PRESENT INVENTION

The Claims are directed to pipe and pipe couplings, *per se*, formed from polyethylene containing less than 1 part by weight of talc per 100 part PE. Claims 31-32 are directed to extruding or injection-shaping pipes or pipe couplings.

The present Claims recite polyethylene-based compositions comprising a very small amount of talc, *i.e.*, less than 1 part by weight of talc per 100 parts by weight of polyethylene. Applicants have found that the addition of such a small amount of talc to polyethylene compositions provides compositions with improved resistance to hydrostatic pressure and a markedly improved creep resistance (page 1, lines 21-23). The addition of small amounts of talc of less than 1 part by weight per 100 parts by weight of high density polyethylene provides compositions which make possible the manufacture of shaped articles, such as pipes, for which **the creep resistance is significantly improved without affecting the other mechanical properties of the said shaped articles, such as the resistance to the slow propagation of cracks** (stress cracking of ESCR) (page 2, lines 9-15). Consequently, the resins are very suitable for the manufacture of high pressure pipes (see application, page 1, lines 15-23). The unexpected results were clearly demonstrated by the comparison of Example 1 (according to the invention) and Comparative Example (see Table I at page 8).

Regarding obviousness, reference is made once again to the Declaration of Andre Scheelen filed on August 29, 2001. From this, it is clearly shown that the addition of less than 1 part per 100 by weight of talc has particularly beneficial effects on the properties of pipes or pipe couplings, compared with either adding none or with adding more. That much has been

previously discussed and acknowledged by the Examiner. This benefit is not suggested in any of the prior art. There is nothing to indicate to the skilled person that adding less than 1 wt % of talc to a pipe composition would have such a beneficial effect on the pipe properties and, accordingly, there would be no incentive to do so.

**DETERMINATION OF THE SCOPE AND CONTENT
OF THE REFERENCES AND THE DIFFERENCES**

The Claims presented herein are novel over the new prior art (to Takeda, Park, Akiyama, and Jenkins), none of which describes pipes or pipe couplings. The Claims are also novel over Wooster, as Wooster does not disclose specifically adding less than 1 part per 100 by weight of talc. The MPEP Section 2131 dictates that a reference is not available to establish anticipation unless that reference describes each and every recitation of the Claim.

1. The TAKEDA Reference (U.S. 4847150)

The reference relates to **foams**. Please see the ABSTRACT and column 1, lines 5-10. At column 9, Takeda indicates that the foams of that invention do not have surface skins, and thus laminates of the foam and corrugated fiberboard are superior to those prior to Takeda. The Takeda foams comprise both polystyrene (particularly butadiene styrene block copolymer(s)) and polyethylene. As can be seen from the disclosure of column 1, lines 25-67, Takeda sought to use the best characteristics of each of the two polymeric components. The disclosure of Takeda et al column 4 refers to a large group of nucleating agents which include talc.

2. **Akiyama U.S. Patent No. 4,806,293**

This reference, like Takeda, relates to the production of **foams** and, more specifically, to a method for the production of foams. The compositions are not described with particularity. Rather, Akiyama states that any thermoplastic material may be employed. Applicants note that Akiyama suggests that, along with dichlorotetrafluoroethane and/or dichlorodifluoromethane, either some talc or no talc can be used in the composition to be foamed.

3. **Jenkins *et al***

Applicants respectfully traverse the rejection of the Claims over Jenkins *et al.*

Jenkins *et al.* relates to **films**. Accordingly, Jenkins *et al.* does not suggest compositions for making pipe and pipe coupling of Claims 26 *et seq.* The compositions of Jenkins are completely different from those of the rejected Claims **which recite contents of less than 1 part of talc per 100 part of polyethylene**. Specifically, Jenkins *et al.* discloses compositions containing

- from about 50 to about 95 weight percent of HDPE,
- from about 5 to 40 weight percent of polyisobutylene, and
- **from about 1 to 30 weight percent** of a filler, **such as talc**.

The content of talc in the Jenkins *et al.* compositions does not overlap with the range in the rejected Claims, and is expressed differently, *i.e.*, from about 1 to 30 weight percent of a filler such as talc.

By way of explanation it is noted that, the theoretically disclosed compositions of **Jenkins et al** containing the maximum of HDPE (*i.e.* 95wt % of HDPE) and the minimum of talc (*i.e.*, 1 wt % of talc) have an amount of talc which is $(1/95) \times 100 = 1.05$ **part of talc per 100 parts of HDPE**.

The compositions of the finally rejected Claims are not only novel in view of Jenkins, as:

- in the present invention: less than 1 part of talc is used per 100 parts of PE, and
- in Jenkins: at least 1.05 parts of talc per 100 parts of PE, is used.

but also the Claims are unobvious over Jenkins. The only suggestion in Jenkins et al. is to dilute the polyethylene in the Jenkins et al compositions with talc. The Jenkins et al. description does not advise whether such a dilution has a positive or negative effect -- or any effect at all -- on the mechanical properties of the resultant blend or admixture. Jenkins et al. provides no description that talc inclusion improves the physical properties of the PE, in the amounts Jenkins et al. employs. Indeed, Jenkins et al. only Claims the use of talc as a filler.

The main property of a filler is to add weight to a resin (so that the resin costs less). If adding weight is the suggestion to be gleaned from Jenkins et al., and dilution of the PE is for economic gain -- and that is the only express suggestion available from the Jenkins et al. written description -- a person skilled in the art would not logically deduce that adding less than 1 part per 100 parts of PE flowed from the written description of Jenkins et al.

In view of Jenkins et al., there is no motivation for one skilled in the art to use such a small amount of talc in polyethylene based compositions.

To overcome the failures of Jenkins et al., the Office Action suggests that, apparently notwithstanding the absence of an overlap of the ranges, "Since Jenkins et al. teach talc merely used as a filler, it would have been obvious to one having ordinary skill in the art to have used less filler if e.g. manufacturing costs were not an issue." Page 7, second paragraph. However, this argument is problematic for at least the following reasons.

First, the suggested modification of Jenkins et al. apparently relies on impermissible hindsight based on the disclosure of the present application; in the present application, it has been determined that talc in the claimed range unexpectedly enhances creep resistance. See Examples, Table I, and page 8, lines 1-5. The possibility that manufacturing costs are not an issue is not suggested by Jenkins et al. Accordingly, since no other motivation is cited by the Office Action and since Jenkins et al. lacks any such motivation, the only possible basis for the asserted motivation is impermissible hindsight.

Second, Jenkins et al. provides the opposite motivation to that suggested in the Office Action. That is, the apparent motivation of Jenkins et al. is to use "fillers" to reduce manufacturing costs. In other words, Jenkins et al. teaches away from the suggested modification and, accordingly, fails to establish a *prima facie* case of obviousness against the claimed invention.

Third, even if the suggested modification was supported by a reference, one skilled in the art would still not find the claimed invention obvious based on the disclosure of Jenkins et al. Specifically, as suggested by the Office Action, if manufacturing costs were not an issue, one skilled in the art relying on Jenkins et al. would not use talc at all. Accordingly, because the

proposed modification would render Jenkins et al. unsatisfactory for its intended purpose due to the absence of filler, there is no suggestion or motivation to make the proposed modification. See *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984). Furthermore, in this light, Jenkins et al. would be read not to have any talc and, thereby, would not teach or suggest the claimed range.

Fourth, even if the modification of Jenkins et al. was within the skill of the art, this is not sufficient to establish a *prima facie* case of obviousness without some objective reason to modify the teachings of the reference. See *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993).

For at least the above reasons, the rejections of Claims collectively and individually are traversed. In addition, the Claims are believed to be independently allowable.

Jenkins et al. teaches talc generally as a filler but does not teach or suggest that the talc has a lamellar texture.

4. Wooster et al.

The Applicants respectfully traverse the rejection of Claims 1-15 over Wooster et al. alone under 35 U.S.C. 103.

Wooster does refer to the inclusion of additives in a molded material, specifically stating that:

Although generally not required, the molded material of the present invention can also contain additives to enhance antiblocking and coefficient of friction characteristics including, but not limited to, untreated and treated silicon dioxide, talc, calcium carbonate, and clay, as well as primary, secondary and substituted

fatty acid amides, release agents, silicone coatings, etc. Still other additives, such as quaternary ammonium compounds alone or in combination with ethylene-acrylic acid (EAA) copolymers or other functional polymers, can also be added to enhance the antistatic characteristics of the polyethylene material of this invention. (Col. 14, lines 22-33.)

However, the reference in Wooster et al. to the inclusion of talc is only a general one. Accordingly, Applicants respectfully assert that Wooster et al. fails to render the claimed invention obvious for at least the following reasons, and is thus cumulative to Jenkins et al.

Wooster et al. fails to provide any teaching or suggestion with respect to the selection of talc from the broad category of additives and the (infinitely) large number of identified compounds. Wooster et al. teaches an open ended set of at least ten independent categories of additives for antiblocking and friction characteristics. Specifically, (1) untreated silicon dioxide, (2) treated silicon dioxide, (3) talc, (4) calcium carbonate, (5) clay, (6) primary fatty acid amides, (7) secondary fatty acid amides, (8) substituted fatty acid amides fatty acid amides, (9) release agents, and (10) silicone coatings. It is noted that at least categories (6)-(10) represent essentially unlimited numbers of components.

Wooster et al. does not teach that talc has a beneficial effect on the resistance to hydrostatic pressure or creep resistance.

In order to establish a *prima facie* case of obviousness, some motivation to select among the (infinitely) large number of additives must be taught or suggested by the reference. See *In re Duel*, 51 F.3d 1552, 1558-9 (Fed. Cir. 1995). Wooster et al. lacks any such motivation for selection and, accordingly, fails to render obvious the claimed invention. Wooster et al., rather

than providing incentive, leads away in the sense that Wooster et al. suggests there is no advantage in using talc in the Wooster et al. polyethylene blends

Second, Wooster et al. fails to teach or suggest a means for selecting the talc content of the claimed invention. In particular, Wooster et al. teaches that, although not generally required, additives to enhance antiblocking and coefficient of friction characteristics can be added to the compositions (col. 14, lines 22-29). Talc is cited (in a long list of compounds) as being such an additive. Enhancing antiblocking or coefficient of friction characteristics is not an issue of the present invention. These are typical characteristics for **film manufacturing** processes. Moreover, there is also no relation between antiblocking or coefficient of friction characteristics and resistance to hydrostatic pressure or creep resistance.

The Office Action asserts that, based on Wooster et al., "it would have been obvious to one having ordinary skill in the art to have included the talc in an effective amount to have imparted antiblocking and coefficient of friction characteristics." Page 8, last full paragraph. Assuming for the sake of argument that this statement is accurate, it is nevertheless irrelevant to the composition of the present invention wherein the identification of the claimed talc range is based on the unexpectedly determined enhancement to creep resistance. See Examples, Table I, and page 8, lines 1-5. Accordingly, Wooster et al. fails to render obvious the claimed invention.

Third, Wooster et al. fails to teach or suggest the claimed range of talc. Thus, Wooster et al. provides no enablement for the efficacious use of additives in the Wooster et al. polyethylene blends nor enablement for Applicants claimed composition. The Office Action asserts that "The determination of such [effective] amount of talc to impart such [antiblocking and friction]

characteristics is deemed to be routine optimization and well within the level of skill of the ordinary artisan." Page 8, last full paragraph. However, as discussed above, Wooster et al.'s teachings with respect to antiblocking and friction differ from the parameter of creep resistance on which the claimed range is based. Similarly, the statement in the Office Action that it would have been obvious to use "more or less of the talc additive if manufacturing costs were of an issue" is not relevant as the issue disclosed in the specification on which the claimed range is based is creep resistance. Moreover, the argument is essentially an 'obvious to try' rationale. Accordingly, the basis is impermissible to support a *prima facie* case of obviousness. See *In re O'Farrel*, 853 F.2d 894, 900 (Fed. Cir. 1986).

One skilled in the art desiring to improve the resistance of HDPE pipes to hydrostatic pressure so that they can be used under high pressure is not motivated to use a teaching relating to the improvement of the antiblocking properties of films. For at least the above reasons, the rejections are respectfully traversed.

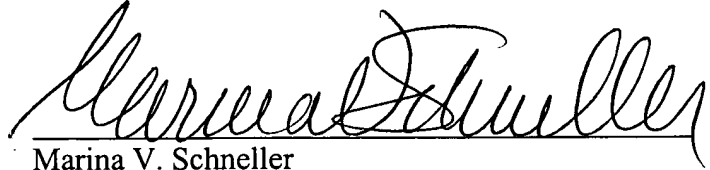
RESPONSE TO THE PATENT AND TRADEMARK OFFICE ALLEGATIONS

In the third paragraph of page 5 of the outstanding final Office Action, the Patent and Trademark Office alleges, "it is the Examiner's position that the recited melt flow would be inherent." Melt flow correlates to molecular weight. If neither is described in an applied reference, "inherency" is an irrelevant consideration. It is an old adage, "Inherency can not be based on the unknown."

Application No. 09/115,229
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Reconsideration and withdrawal of the pending rejections is respectfully solicited.

Respectfully submitted,



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